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LUMBER SAVED BY USING ODD LENGTHS.

The National Lumber Manufacturers' Association adopted resolutions in 1909 in favor of the manufacture of odd lengths of flooring, ceiling, drop and bevel siding, finish, partition, and molding. The leading lumber manufacturers of the Pacific coast have gone a step farther and have put the resolutions into effect. Heretofore, even lengths have been the rule; that is, lumber has been cut into lengths that are multiples of 2 feet, as 10, 12, 14, 16, and so on. These resolutions have prompted the Forest Service of the Department of Agriculture to investigate the effect they might have in saving waste in lumber manufacture. Statistics gathered on the Pacific coast and in the yellow-pine regions of the South show that the manufacture of nothing but even lengths results in a waste of material, and that a considerable saving can be effected by cutting odd lengths.

Under conditions that prevail upon the Pacific coast the making of odd lengths will increase the output of the different classes of products considered by 2.07 per cent, and this saving will come from material heretofore wasted.

An inquiry in the yellow-pine region, covering both shortleaf and longleaf yellow-pine lumber, shows that a similar saving can be effected in the South. The results are given in Tables 1 to 4.

The investigation in the South, as in the West, was limited to flooring, ceiling, siding, finish, molding, and partition material. The percentage which it is possible to save, therefore, is based on that part of the sawmill output that goes into these products. Some of the mills at which figures were obtained were large, others were comparatively small. The mills numbered 5 and 6 in Tables 1, 2, and 3 were of about 60,000 feet daily capacity, and afforded an excellent opportunity to check the results at larger mills. These smaller mills, however, were operated by large concerns, which operated in addition their main mills of 150,000 to 200,000 feet daily capacity. The results from these two, averaged together, differ but slightly from the final results.

Table 1 gives, for six yellow-pine mills, the amount of lumber tallied, the amount trimmed off in both sawmill and planing mill, and shows how much of the amount trimmed off is lost because odd lengths are not manufactured. The average loss due to the non-manufacture of odd lengths is 1.21 per cent of the material.

Table 2 shows the possible saving by trimming to odd lengths in the planing mill only. It also shows the saving possible in the different mills for flooring, siding, partition, and ceiling. If odd lengths were cut in the planing mill only, the saving would be 0.62 per cent of the planing-mill output. The saving by cutting odd lengths in the planing mill would, therefore, be a little more than the saving in the sawmill.

Estimating the planing-mill products at 22 per cent of the total output of yellow pine, the figures obtained in this study indicate that approximately 30,000,000 feet of planing-mill material might be saved annually by manufacturing odd lengths in both sawmill and planing mill. At \$20 per thousand the value of this material is \$600,000.

If his operation be something near an average one, the individual manufacturer may calculate with reasonable accuracy his possible saving by cutting odd lengths. Taking 1.21 per cent of his planing-mill output, he should find its value at his f. o. b. mill price for the class of material which he is considering. This amount represents the value of the material saved by cutting to odd lengths at both the sawmill and planer. Against this he must figure, first, for the extra trimming apparatus, and possibly extra pay to the trimmer; second, for extra shedding for planing-mill material before it is taken to the planer, plus extra cost of handling; third, for the extra shedding for the planing-mill material awaiting shipment, plus the extra cost of handling. If he trims the odd lengths at the planer only, he will save 0.62 per cent of his planing-mill products, and be required to meet only the expense of shedding and handling after the material has passed the planing mill.

The principal objection to odd lengths has come from the retailer and the consumer, who declare that owing to present standards of construction, odd lengths of planing-mill products can not be utilized with as great economy as when only even lengths are used.

It has not heretofore been made clear what percentage of odd lengths would be shipped if their manufacture were standardized. Table 3 presents figures from two mills on this point. The figures indicate that if odd lengths were made in both sawmill and planing mill the result would be about 16 per cent of odd length material; if made at the planer only, approximately 11 per cent. A larger percentage could not have been secured without involving a sacrifice

by trimming off clear lumber. The retailer may on this basis calculate the cost to himself of extra shedding and of introducing odd lengths to the trade.

The consumer wants to know how many odd-length boards can be used to advantage in building. Table 4 shows that in material 9 feet and over in length 39.5 per cent can be used, a much greater per cent than the retailer could supply. The investigation shows that all of the odd lengths in the hands of the retailer can be used by the trade, but not by all classes of buyers in the trade. Some buyers will want 40 per cent odd lengths, others as little as 5 per cent. Moreover, certain odd lengths will be useful to one builder and different odd lengths to another. One builder may be able to use 11 and 13 foot boards, another builder may want only 15 and 17 foot boards. In the long run, however, the retailer can easily dispose of all of his stock. Table 4 also indicates the larger proportion of material which is used under 9 feet in length, and of this the still greater proportion of odd lengths.

From this analysis it appears that a reasonable basis exists for the manufacture of odd lengths of planing-mill products in the yellow-pine industry. For the manufacturer there is a salvage of waste material which will pay for itself and bring in a profit besides. For the builder there is a present need of odd lengths which is not now supplied. For the most economical results he needs nearly 40 per cent of odd-length stuff. There is no prospect of his getting more than 16 per cent. He will not be oversupplied. Conditions, therefore, emphasize the advisability of manufacturing odd lengths. It remains for manufacturers, retailers, and consumers of yellow pine to get together and agree upon means of bringing them into use under the most favorable conditions for the trade.

TABLE 1.—Waste due to even-length manufacture, sawmill and planing mill combined.

Mill.	Quantity of lumber tallied.	Amount trimmed off.			Feet unnecessarily wasted.
		Total.	Necessary waste.	Unnecessary waste.	
	<i>Board feet.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	
1.....	34,497	5.22	4.18	1.04	359
2.....	39,956	6.93	6.04	.89	356
3.....	18,765	8.89	6.56	2.33	435
4.....	25,082	8.93	7.70	1.23	309
5 ^a	12,325	7.47	6.55	.92	113
6 ^a	20,208	7.92	6.67	1.25	253
Total.....	150,833	7.29	6.08	1.21	1,825

^a Mills of 60,000 feet capacity, at which it was possible to check the accuracy of the results at the other mills, which were larger.

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TABLE 2.—Possible saving by trimming to odd lengths in the planing mill only.

Mill.	Form.	Lengths.	Board feet tallied.	Possible saving.	
		<i>Feet.</i>		<i>Board ft.</i>	<i>Per cent.</i>
1.....	Flooring, 1x4 feet.....	6 to 20....	12,677	68	0.54
2.....	do.....	10 to 20....	4,087	19	.46
4.....	do.....	8 to 20....	4,172	28	.67
5.....	do.....	10 to 16....	3,194	26	.81
2.....	D. siding, 1x6 feet.....	10 to 20....	2,073	7	.34
4.....	do.....	8 to 16....	809	7	.87
6.....	Partition, 1x4 feet.....	8 to 18....	1,108	11	.99
1.....	Ceiling, 1x4 feet.....	8 to 16....	1,034	10	.97
2.....	do.....	10 to 20....	1,001	7	.70
3.....	do.....	10 to 20....	2,500	20	.80
5.....	do.....	8 to 18....	1,632	8	.49
Total.....			34,287	211	.62

TABLE 3.—Percentage of boards possible to manufacture to odd lengths.

Mill.	Sawmill.			Planer.			Total per cent odd lengths.
	Boards tallied.	Odd lengths.		Boards tallied.	Odd lengths.		
		No.	Per cent.		No.	Per cent.	
5.....	642	25	3.89	1,008	102	10.12	14.01
6.....	1,986	115	5.79	245	32	13.06	18.85
Total.....	2,628	140	5.33	1,253	134	10.69	16.02

TABLE 4.—Percentage of odd lengths used in building.

Description. ^a	Total number.	Odd lengths.		Total pieces 9 feet and up.	Odd lengths 9 feet and up.	
FLOORING.		Number.	Per cent.	Number.	Number.	Per cent.
12 x 16 feet 9 inches; 16 inches on centers; subfloor; gum; one-half of floor; Laurel, Miss.	78	20	25.6	36	0	0.0
17 x 15 feet 6 inches; 16 inches on centers; subfloor; gum; Laurel, Miss.	174	66	37.9	78	37	47.4
16 feet 6 inches x 15 feet 8 inches; 16 inches on centers; subfloor; gum; Laurel, Miss.	184	111	60.3	55	23	41.8
80 x 20 feet; 18 inches on centers; on joists; yellow pine; five-ninths of floor; Laurel, Miss.	293	55	18.8	197	46	23.4
14 feet 4 inches x 11 feet 8 inches; 24 inches on centers; subfloor; yellow pine; Laurel, Miss.	101	48	47.5	1	1	100.0
15 feet 6 inches x 15 feet; 24 inches on centers; subfloor; yellow pine; Laurel, Miss.	38	30	79.0	34	30	88.2
24 x 15 feet; 16 inches on centers; subfloor; yellow pine; four-fifths of floor; Hattiesburg, Miss.	79	18	22.8	51	9	17.6
25 feet 6 inches x 15 feet 3 inches; 16 inches on centers; subfloor; yellow pine; Hattiesburg, Miss.	115	52	45.2	63	14	22.2
21 feet 4 inches x 15 feet; 16 inches on centers; subfloor; yellow pine; Hattiesburg, Miss.	105	46	15.2	65	8	12.3
2 parts; 34 feet 8 inches x 6 feet; one-half floor and 59 feet x 5 feet 9 inches, one-third floor; 16 inches on centers; subfloor; yellow pine; Hattiesburg, Miss.	61	19	31.1	50	11	22.0
40 feet 4 inches x 30 feet; 18 inches on centers; subfloor; yellow pine; one-fourth of floor; Laurel, Miss.	36	15	41.8	28	11	39.3
Average.....	1,264	450	35.6	658	190	28.9

^a The flooring boards run the length given first in the dimensions.

TABLE 4.—Percentage of odd lengths used in building—Continued.

description.	Total number.	Odd lengths.	Odd lengths.	Total pieces 9 feet and up.	Odd lengths 9 feet and up.	Odd lengths 9 feet and up.
SIDING.						
Back of 2-story house; 24 inches studding; yellow pine; Laurel, Miss.....	171	Number 40	Per cent. 23.4	Number 14	Number 0	Per cent. 0.0
2 sides of 2-story house; 16 inches on studding; yellow pine; Laurel, Miss.....	204	94	46.1	78	36	46.2
2 stories on one side and second story of front; 16 inches on studding; yellow pine; Hattiesburg, Miss.....	253	93	36.8	111	50	45.0
First story, 4 sides; 24 inches on studding; yellow pine; Laurel, Miss.....	762	505	66.3	110	65	59.1
Entire house; 16 inches on centers; sheathing used; spruce; Irving Park, Chicago, Ill.....	488	353	72.3	146	104	71.2
3 sides of house; 16 inches on centers; sheathing used; spruce; Albany Park, Chicago, Ill.....	583	295	50.6	96	44	45.8
Do.....	370	131	35.4	113	41	36.3
Average.....	2,831	1,511	53.4	668	340	50.9
CEILING.						
Side ceiling; 24 inches on centers; kitchen; yellow pine; Laurel, Miss.....	154	91	59.4	0	0	.0
Side ceiling; 24 inches on centers; bath; yellow pine; Laurel, Miss.....	110	70	63.6	0	0	.0
Side ceiling; 24 inches on centers; bedroom; yellow pine; Laurel, Miss.....	355	146	40.1	102	34	33.3
Do.....	226	75	33.2	68	11	16.2
Side ceiling; 24 inches on centers; kitchen; yellow pine; Laurel, Miss.....	378	143	30.0	76	40	52.6
Do.....	540	214	39.6	59	17	28.8
Average.....	1,763	739	41.9	305	102	33.4
FINISH.						
Base; 16 inches on centers; yellow pine; Laurel, Miss.....	16	7	43.8	3	1	33.3
Molding; 16 inches on centers; yellow pine; Laurel, Miss.....	23	13	56.5	2	2	100.0
1 single and 1 double door; yellow pine; Laurel, Miss.....	56	43	76.8	21	20	95.2
Base and molding; 16 inches on centers; yellow pine; Hattiesburg, Miss.....	16	11	70.0	6	4	66.7
Do.....	11	7	63.6	0	0	.0
2 doors; yellow pine; Hattiesburg, Miss.....	11	8	72.7	0	0	.0
5 windows; yellow pine; Hattiesburg, Miss.....	65	60	92.3	0	0	.0
Closet; yellow pine; Hattiesburg, Miss.....	9	7	77.7	0	0	.0
Base and molding; 16 inches on centers; yellow pine; Hattiesburg, Miss.....	89	43	48.3	15	4	26.7
Door; yellow pine; Hattiesburg, Miss.....	5	3	60.0	0	0	.0
3 windows; yellow pine; Hattiesburg, Miss.....	7	5	71.4	2	0	.0
Average.....	308	207	67.2	49	31	63.3
Average all forms.....	6,166	2,907	47.1	1,680	663	39.5

Approved:

JAMES WILSON,
Secretary.

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